

## Claims

1. Method for maintaining a system

5 by executing a real process in the system

characterized by

10 executing a simulation process synchronously with the real process,  
with the simulation process simulating at least a part of the real  
process,

comparing the simulation process with the real process or the part  
thereof and obtaining a comparison result from this, and

15 deriving maintenance measures from the comparison result.

2. Method according to Claim 1 wherein synchronizing with the real  
process takes place for executing the simulation process.

20 3. Method according to Claim 1 or 2 wherein the simulation process  
and real process each comprise several steps and wherein at least  
one of the steps in each case is compared with the other for the  
purpose of deriving maintenance measures.

25 4. Method according to one of the Claims 1 to 3 wherein comparing  
takes place using end results of the real process and simulation  
process relating in particular to process-control-related variables  
and/or component results from one or more steps of the real process  
30 and simulation process relating in particular to process-control-  
related variables.

5. Method according to one of the Claims 1 to 4 wherein the real  
process and simulation process are controlled jointly by a single  
35 control device.

6. Method according to one of the Claims 1 to 5 wherein a maintenance measure is an alarm and/or activation of a maintenance system.

5 7. Method according to one of the Claims 1 to 6 wherein a simulation process structure is automatically generated from a real process structure, in particular using a generic simulation model.

8. Method according to one of the Claims 1 to 7 wherein the simulation process is supplied with substance and/or production parameters from the real process.

9. Device for maintaining a system on which a real process with one or more real process steps can be executed

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characterized by

a simulation device for simulating at least a part of the real process by means of a simulation process wherein the simulation process can be executed synchronously with the real process,

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a comparison device for comparing the simulation process with the real process, with a comparison result being obtained from this, and

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a control device for initiating a maintenance measure on the basis of the comparison result.

10. Device according to Claim 9 wherein the simulation process in the simulation device can be synchronized with the real process.

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11. Device according to Claim 9 or 10 wherein the simulation process and real process in each case comprise several steps and wherein at least one of the steps in each case can be compared with the other in the comparison device.

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12. Device according to one of the Claims 9 to 11 wherein comparing can be carried out in the comparison device using end results of the real process and simulation process relating in particular to process-control-related variables and/or component results from one  
5 or more steps of the real process and simulation process relating in particular to process-control-related variables.
13. Device according to one of the Claims 9 to 12 wherein the real process and simulation process can be controlled jointly by a single control device.  
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14. Device according to one of the Claims 9 to 13 which is embedded in a maintenance system.
- 15 15. Device according to one of the Claims 9 to 14 wherein a simulation process structure can be automatically generated from a real process structure, in particular using a generic simulation model.
- 20 16. Device according to one of the Claims 9 to 15 wherein the simulation device can be supplied with production parameters from the real process.